We claim: ~~CLAIMS~~

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1(currently amended). **A numerically** ~~Numerically~~ controlled method of moving an object to be controlled along a predetermined locus, **by** controlling **respective** control axes **in a joint space**, said method comprising:

approximating ~~making~~ said locus **by defining** ~~approximate to~~ a spatial polynomial ~~;~~ **in a work space;**

converting **a parameter λ of** said **spatial** polynomial**, which is not dependent on time, to insert a** ~~into a polynomial as~~ time **variable t** function**, thereby obtaining a time parameter polynomial defining position as a function of time**;

~~distributing said polynomial converted as time function to said each control axis;~~

~~producing control command in said each control axis on the basis of said polynomial distributed to said each axis as time function; and~~ **applying said time parameter polynomial to said respective control axes in said joint space, including distributing said time parameter polynomial over each said control axis;**

producing control commands for said respective control axes in said joint space on the basis of said time parameter polynomial as applied to said control axes in said joint space; and

moving said object to be controlled along said locus, **while** controlling ~~each~~**said respective** control ~~axis~~**axes in said joint space** on the basis of said control command.

2(currently amended). The numerically controlled method as set forth in claim 1 wherein said control command is produced **partly** on the basis of a position command on **displacement at a given time from** ~~the basis of~~ said **time parameter** polynomial ~~converted as time function~~, a velocity command obtained **from a first derivative of** ~~by first deriving~~ said **time parameter type** polynomial ~~converted as time function~~, and an acceleration command obtained **from a second derivative of** ~~by second deriving~~ said **time parameter type** polynomial ~~converted as time function~~.

<u>3(currently amended).</u> The numerically controlled method as set forth in claim 1 wherein said control command is executed by computing a position and velocity at the time in future when said object to be controlled has not yet moved on the basis of said **<u>time parameter type</u>** polynomial ~~as time function and commanding~~.

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4(new claim). A method for controlling an object in a work space, the object being positionable in the work space by controls operable to position the object in plural control axes, comprising:

defining a spatial locus of the object including a line in the work space, wherein the line is approximated by a spatial polynomial having displacement variables, the spatial polynomial representing the line by spatial variables independent of time;

applying a time function to at least one said spatial variable, and converting said spatial polynomial to a motion polynomial by replacing said spatial variable with the time function, the motion polynomial having spatial variables as a function of time;

distributing motions defined by the motion polynomial over the plural control axes, each of the control axes having a corresponding axis motion as a function of time; and,

controlling the plural control axes according to a respective said corresponding axis motion.

5(new claim). The method of claim 4, wherein the plural axes are controlled by feedback control loops responsive to displacement of the object and also to at least one of velocity, acceleration and jerk of the object, and wherein the control loops are at least partly responsive to a value of said at least one of velocity, acceleration and jerk derived mathematically from the motion polynomial.

6(new claim). The method of claim 5, further comprising differentiating the motion polynomial at least once to define a control input to a control loop of one of the plural axes.

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7(new claim). The method of claim 6, comprising predicting at least one of a velocity, acceleration and jerk at a future point in time during control of said one of the plural axes.